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## (54) FIBROUS WALLCOVERING

(71) We, IMPERIAL CHEMICAL INDUSTRIES LIMITED, Imperial Chemical House, Millbank, London, SW1P 3JF, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a wallcovering and in particular to a wallcovering comprising a thermoplastic polymeric sheet material which has attached to one of its major surfaces, to provide a decoration thereon, a fibrous web.

Wallcoverings having a decorative surface provided by a fibrous web are well known. However known wallcoverings, being based on paper, require first to be pasted and then to be allowed to soak in the paste for a few minutes before they can be attached to the wall. Inevitably during the pasting operation there is a danger that paste will attach itself to the fibrous surface of the wallcovering. The paste is difficult, if not impossible, to remove and spoils the decoration.

Rolls of known wallcoverings of this type are heavy — varying from about 1.0 kg to about 2.0 kg. Apart from the problems associated with packaging and transport, rolls of such wallcoverings require to be cut up into short lengths before they can be attached to the wall.

Also when the time comes to redecorate, such wallcoverings can only be removed by the application of water to the wallcovering and, in the case of wallcovering based on vinyl coated paper, after the vinyl coating has been stripped from the paper backing.

According to the present invention we provide a wallcovering comprising a sheet of foamed aliphatic thermoplastic polymeric material, to a major surface of which is attached, through the medium of an adhesive, a fibrous web, the aliphatic thermoplastic resin being a foamed low density

polyolefine of bulk density of from 0.05 to 0.5 g/cc having a permeability to air as measured by BS 2925 of from 0.0005 to 0.4 ml/cm<sup>2</sup>sec.cm. head, a permeability to water vapour as measured by BS 3177 of from 500 to 40,000 g/m<sup>2</sup>d.mil and a permeability to water of from 0.5 to 400 ml/m<sup>2</sup>min.cm. head.

Such a wallcovering has a number of advantages over conventional wallcoverings of this type. It is dry-strippable from the wall; it does not require to be soaked in paste and can be attached to the wall through the medium of a paste which has been applied to the wall and so the likelihood of paste adhering to the fibrous web is reduced; it is sufficiently light (as low as 0.6 kg per roll) to allow it to be hung direct from the roll. Furthermore if the fibrous web provides the decorative surface of the wallcovering then the wallcovering has good scuff resistance.

The fibrous web which is attached to the surface of the sheet of foamed aliphatic polymeric material may be printed or plain and may be a non-woven web or a woven or knitted fabric produced from natural or synthetic fibrous materials including cotton, wool, jute, rayon, nylon, polyester or strands of metal wire or threads of a metallised plastics material such as polyethylene terephthalate. It should be understood that the fibrous web may be constructed from two or more different fibrous materials.

Examples of non-woven webs which may be used are:—

1. point bonded non-woven fabrics
2. 'Cambrelle'
3. non-woven viscose fabrics

Examples of woven or knitted fabrics which may be used are:—

1. plain-woven fabrics
2. loop pile warp-knitted nylon fabrics

The fibrous web may be a pile surface material produced from fibreisable material particularly a thermoplastic material as described for example in British Patent

Specifications 1,334,672, 1,378,638, 1,378,639, 1,378,640 and 1,399,095 and Dutch Patent Applications 73,16259, 74,12700 and 75,031199. In the techniques of these specifications, a laminar pile surface material is formed by feeding a thermoplastic material and a backing to a heated surface with a thermoplastic material between the backing and the heated surface so that the combination of the thermoplastic and the backing may be peeled away from the heated surface so that the thermoplastic is drawn into fibrils or tufts to provide a pile surface. In this process, the backing may itself be a fabric or paper.

Suitable fabrics include woven and non-woven materials such as hessian, cotton, linen, nylon and polyester fabrics and nets and whilst these are preferred because of flexibility and the ease of forming a roll, a backing of paper however is preferred on cost grounds. The thermoplastic from which the pile surface is formed may be any of those materials described in the aforesaid Patent Specification but is preferably polyethylene. It is also preferred that the pile is at least 1 mm long, most preferably between 2 mm and 5 mm long.

The fibrous web is attached to the surface of the sheet of foamed aliphatic thermoplastic polymeric material through the medium of a suitable adhesive, for example a polyvinyl alcohol adhesive. It will be realised, however, that the adhesive which is used will depend on the nature of the fibrous web used.

The adhesive can be applied as a continuous coating on the sheet by a conventional spreading method, e.g. knife over blanket; knife over roller, in which case the web will adhere to the whole surface of the sheet. Alternatively in certain circumstances it may suffice to apply the adhesive as a discontinuous coating on the foamed sheet. Alternatively, where the fibrous web is either transparent or translucent or where the fibrous web consists of an open-weave or open-mesh fabric, the foamed sheet can be printed and/or embossed before it is attached to the fibrous web. Conveniently the foamed sheet or fibrous web is printed by a flexographic technique.

The invention will now be described with reference to the following Examples:—

#### EXAMPLE 1

A wallcovering according to the invention was made as follows:—

A sheet of foamed polyethylene (as sold by Imperial Chemical Industries Limited under the Registered Trade Mark 'Alkalite') having a thickness in the range 0.019 to 0.024 inch (480 to 610  $\mu$ m) was provided with a continuous, 0.003 inch thick, coating

of an adhesive based on polyvinyl alcohol by a knife roller technique.

A plain, raised and cropped, woven fabric having a weight of 230 gsm and constructed from cotton fibres was laminated to the adhesive coated foamed sheet by the application of light pressure by passage between two pressure rollers. The adhesive was dried by passing the laminate through an oven maintained at between 65°C and 75°C.

The laminate so formed was then rolled up in the manner of a conventional wall-covering.

A hanging trial was then carried out. A wall having a clean surface was pasted with an adhesive sold by Polycell Holdings Limited under the Registered Trade Mark 'Polymura' using a roller. A roll of the laminate was unrolled and the foamed polyethylene surface of the laminate was offered up to the wall, smoothed into place and cut neatly at the top and bottom of the wall. This was repeated until the wall was covered by the laminate.

#### EXAMPLE 2

A wallcovering according to the invention was made as follows:—

A sheet of foamed polyethylene as described in Example 1 was provided with a 0.003 inch thick coating of an adhesive based on polyvinyl alcohol by a knife over roller technique.

A point bonded non-woven fabric having a weight of 50 gsm and constructed from nylon was laminated to the adhesive coated foamed sheet by the application of light pressure by passage between two pressure rollers. The adhesive was dried by passing the laminate through an oven maintained at between 65°C and 75°C.

The laminate so formed was then rolled up in the manner of a conventional wall covering.

A hanging trial was then carried out as described in Example 1.

#### EXAMPLE 3

A wallcovering according to the invention was made as follows:—

A sheet of foamed polyethylene as described in Example 1 was provided with a 0.003 inch thick coating of an adhesive based on polyvinyl alcohol by a knife over roller technique.

A bulked non-woven nylon fabric (sold by Imperial Chemical Industries Limited under the Registered Trade Mark 'Cambrelle') was laminated to the adhesive coated foamed sheet by the application of light pressure as in Example 1. The adhesive was dried as in Example 1.

The laminate so formed was rolled up in the manner of a conventional wallcovering and subsequently a hanging trial was carried

out in the manner described in Example 1.

WHAT WE CLAIM IS:—

1. A wallcovering comprising a sheet of  
5 foamed aliphatic thermoplastic polymeric  
material, to a major surface of which is  
attached, through the medium of an adhe-  
sive, a fibrous web the aliphatic thermo-  
plastic resin being a foamed low density  
10 polyolefine of bulk density of from 0.05 to  
0.5 g/cc having a permeability to air as  
measured BS 2925 of from 0.0005 to 0.4  
ml/cm<sup>2</sup>sec.cm. head, a permeability to water  
vapour as measured by BS 3177 of from  
15 500 to 40,000 g./m<sup>2</sup>d.mil and a permeability  
to water of from 0.5 to 400 ml/m<sup>2</sup>min.cm.  
head.

2. A wallcovering as claimed in Claim 1  
in which the major surface to which the

fibrous web is attached provides the decora- 20  
tive surface of the wallcovering.

3. A wallcovering as claimed in Claim 1  
or Claim 2 in which the aliphatic thermo-  
plastic resin is a foamed polyolefine.

4. A wallcovering as claimed in any one 25  
of the preceding Claims in which the fibrous  
web consists of an open-weave or open-mesh  
fabric and the foamed sheet has been printed.

5. A wallcovering as claimed in any one 30  
Claims 1 to 3 in which the fibrous web has  
been printed.

6. A wallcovering as claimed in Claim 1  
and substantially as described herein with  
specific reference to any one of the Examples 35  
provided.

R. HULSE,  
Agent for Applicants.

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